1984 HIGHWAY COST ALLOCATION STUDY

MISSOURI HIGHWAY AND TRANSPORTATION DEPARTMENT

HIGHWAY COST ALLOCATION STUDY

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TABLES AND ILLUSTRATIONS

PREFACE

The State Highway System in Missouri operates on a "pay as you go" basis. All State funds for construction, maintenance and administration of the system are derived solely from fees assessed on the ownership and/or operation of vehicles within the State. Revenue from such fees is supplemented by Federal funds which are similarly derived.

This study is limited to the State Highway System and follows the traditional concept that the user is the beneficiary and is therefore responsible for the cost. Several other State agencies receive a portion of the State highway revenues for reimbursement of highway-related costs. By constitutional provision, cities and counties also receive a portion of the State collected revenues for use on roads and streets under their jurisdiction. Although local jurisdictions receive some road funds from property taxation unrelated to vehicle operation or ownership, none of these funds accrue to the State system.

Previous studies have estimated the cost responsibility assignable to the various vehicle registration classes and the revenues generated by them. Enactment of new truck weight legislation in 1983 and new license fee structures in 1984 made it desirable to re-evaluate these factors.

The study does not reflect or address highway needs. It uses available data to project the average estimated vehicle cost responsibility and payment to the Fiscal Period 1984 to 1986, based on current fee structures. This period was selected so that availability of Federal funds provided by the Surface Transportation Assistance Act of 1982 could be accurately predicted.

Data in the tables and conclusions reached are based on projections to Fiscal Year 1985, the mid-year of the study period, which was assumed to represent the average condition. These have been adjusted to allow for the effects of the license fee schedule enacted in 1984.

REPORT SUMMARY

In 1983 the State system of highways included 32,229 roadway miles. Of this mileage 1,124 miles were Interstate, 6,832 miles were Primary and 24,273 miles were Supplementary Highways. Total mileage by 1985 is expected to change very little. There will be an increase of 29 miles on the Interstate System when completed. Other construction will primarily consist of improving existing facilities to serve better the needs of the traveling public.

Travel on this system from 1983 to 1985 is estimated to increase over 9% and reach 29.2 billion vehicle-miles per year. Vehicle registrations, excluding motorcycles, are estimated to increase about 6% to 3.605 million. Passenger cars are estimated to travel 20.1 billion miles annually and light trucks (under 24,001 lbs.) to travel approximately 6.3 billion miles annually. The heaviest trucks (over 60,010) with local registration are estimated to travel 0.056 billion miles annually while those registered for beyond local use are estimated to travel 2.1 billion miles annually.

THIS STUDY IS NOT A NEEDS STUDY. It is intended solely to determine the proper allocation of costs to the various registration classes of vehicles.

The total State user obligation for cost of the State Highway System during the study period, after adjustment for the effect of 1984 legislation, is estimated to be $415 million annually. State funds used directly by the Highway and Transportation Department amount to $311 million of which $91 million is allocated for the construction program, $181 million for maintenance and $39 million for administration.

State funds transferred to other agencies from highway revenues for highway related costs of services and other obligations mandated by law account for another $104 million.

The total estimated annual cost attributed to the State system of highways and the services of supporting agencies is $690 million which contemplates use of all federal funds which are also derived from user fees. This cost is judged to be the direct responsibility of the user (motor vehicle owner and/or operator) who derives direct benefit from the system.

Forecasts of fuel tax, registration and other fees and receipts indicate an annual State user related income of $415 million.

The results show underpayment with respect to responsibility by beyond local trucks registered above 18,000 lbs. and commercial buses. Passenger cars, school buses and most local trucks registered above 42,000 lbs. were found to be overpaying with respect to responsibility.

I

INTRODUCTION

Almost 5 million Missourians are joined by many non-resident users to take advantage of more than 32,000 miles of state-maintained highways for business and pleasure. Although this system represents only 27 percent of the total road and street mileage in Missouri, it carries 73 per cent of the travel.

Municipal, county and township systems augment the State system and help make possible a network providing virtually door-to-door travel throughout Missouri.

Vehicle data over the past several years was used to establish trends on which projections to FY 1985 could be based. In 1983, the latest year for which data is complete, there were approximately 3.4 million vehicles registered in Missouri. Passenger cars represent 74 percent of the total with trucks and buses accounting for the remaining 26 percent. Motorcycles are not a direct part of this data but over 94,000 were registered in 1983.

This study seeks to determine the equitable distribution of cost responsibility for improving, maintaining and administering the State Highway System to the various classes of vehicle registered to use it.

HOW IS THE SYSTEM SUPPORTED?

The predominant sources of State revenue for the State Highway System are the motor vehicle fuel tax (7 cents per gallon), motor vehicle fees, and one-half the sales tax on motor vehicles.

The funds mentioned are all generated from fees on the highway user - that is, motor vehicle owners and/or operators.

Portions of these funds are allocated to other jurisdictions as provided by law. This study is confined only to those funds available to the State Highway System.

WHAT ARE THE STUDY BOUNDARIES?

This study considers the estimated revenue for the State Highway System and the use of the system by the various registration classes of vehicles for the three-year period, Fiscal Years 1984, 1985, 1986, beginning July 1, 1983. Estimates of the average annual conditions for the period are based on construction programs, trend projections and forecasts. These are adjusted for the effects of revisions to motor vehicle fees enacted in 1984.

The following evaluations have been developed:

Allocation of user costs by registration class; and
Comparison of user costs to user generated revenue.

WHAT IS CONSIDERED IN ALLOCATING COST RESPONSIBILITY?

While the provision of a State Highway System for the mobility of the State's residents is beneficial to the economic well-being of the State and affects the lives of all its citizens, the cost of operating the system has traditionally been considered to be a direct obligation of the user. Allocation of cost to the user, who directly benefits from the system, considers such factors as vehicle size, vehicle weight, and miles traveled by the various vehicle registration classes and the relationship between the costs and the factors associated with each class.

HOW WAS THE DATA OBTAINED?

The State maintains records which relate to total system mileage, vehicle classification and miles traveled by the various classes of vehicles. Periodic recording is used to update data on commercial vehicle gross operating weights by type of vehicle and gross registered weight.

Maintenance and administration costs are contained in Department files. Construction programs are developed from past cost records and anticipated funds.

II

VEHICLE AND SYSTEM CHARACTERISTICS

This portion of the report analyzes data for the base year (1983) and adjusted average annual (1985) data for the three-year study period. These data provide the bases for the cost allocation study.

WHAT ARE THE TRENDS IN VEHICLE REGISTRATION?

By the midpoint of the study period (1985) it is anticipated that vehicle registration in Missouri will have increased about 6 percent over 1983.

Passenger car registration is estimated to increase by slightly less than 6 percent and truck registration by slightly more than 6 percent. No significant change is anticipated in the registration of privately owned buses, most of which are school buses. Table I shows the projected totals by registration class anticipated for 1985.

Additional classes of truck registration were created by legislation enacted in 1983 which provided for an increase in gross vehicle weight to 80,000 pounds. Changes in allowable axle weights apply to all registration classes.

Trucks registered as "local" are restricted to a 25-mile radius from the municipality of registration. Farm trucks are excepted when hauling the owners' property. The number of trucks registered as local remains fairly stable but represents a decreasing percentage of total truck registration.

Trucks registered as "beyond local" are authorized to operate anywhere within the state.

HOW FAR DO THEY TRAVEL?

Annual travel mileage per vehicle on the State system has been estimated to the nearest 100 miles for each registration class. Estimates are based on 1982 travel vehicle classification counts, the 1977 Truck Census, registration data, estimates of 1985 travel by system and registration forecasts. Vehicle miles of travel are shown in Table II and percentages in Table III.

Average annual vehicle miles per unit on the State system for 1985 are estimated at 7,500 for passenger cars, 10,400 for trucks and 10,100 for buses. However, averages can be misleading. For example, truck travel increases dramatically as the registered weight increases. Table II which shows travel for each group is more enlightening.

1985

ESTIMATED VEHICLE REGISTRATIONS

Passenger Cars	2,679,500

Truck Gross Registered Weight	LOCAL	BEYOND LOCAL
6,000# or less	73,331	465,540
6,001 - 12,000	46,873	177,384
12,001 - 18,000	17,165	17,620
18,001 - 24,000	21,880	11,838
24,001 - 30,000	14,762	7,030
30,001 - 36,000	4,266	2,207
36,001 - 42,000	3,433	1,694
42,001 - 48,000	5,071	2,855
48,001 - 54,000	1,460	1,107
54,001 - 60,010	1,140	1,994
60,011 - 66,000	773	703
66,001 - 72,000	426	--
Over 72,000	2,040	--
66,001 - 73,280	--	578
73,281 - 78,000	--	1,933
Over 78,000	--	18,317
SUBTOTAL Trucks	192,620	710,800

	COMMERCIAL	SCHOOL
Buses	365	3,925

R.V.'s and Vanpools*	17,304

*Data for these vehicles have been included in appropriate weight groups in subsequent tables.

TABLE I

1985

Estimated Vehicle Miles of Travel
STATE SYSTEM

LOCAL TRUCKS & BUSES
(1,000,000)

Truck Gross Registered Weight	INTERSTATE		PRIMARY		SUPPLEMENTARY		TOTAL		
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	TOTAL
6,000# or less	51	62	145	29	110	56	306	147	453
6,001 - 12,000	41	50	116	23	88	45	245	118	363
12,001 - 18,000	13	15	33	7	24	11	70	33	103
18,001 - 24,000	16	17	37	7	26	11	79	35	114
24,001 - 30,000	15	16	34	6	24	10	73	32	105
30,001 - 36,000	4	5	10	2	7	3	21	10	31
36,001 - 42,000	4	4	9	2	7	2	20	8	28
42,001 - 48,000	10	6	12	2	6	2	28	10	38
48,001 - 54,000	3	2	4	1	2	1	9	4	13
54,001 - 60,010	3	2	3	1	2	1	8	4	12
60,011 - 66,000	4	2	3	1	1	1	8	4	12
66,001 - 66,000	3	1	2	-	1	-	6	1	7
Over 72,000	18	5	12	1	2	1	32	7	39
Buses									
Commercial	10	4	7	1	3	1	20	6	26
School	1	1	4	1	6	3	11	5	16

TABLE II
(Continued on page 6)

1985

Estimated Vehicle Miles of Travel
STATE SYSTEM

PASSENGER CARS & BEYOND LOCAL TRUCKS
(1,000,000)

	INTERSTATE		PRIMARY		SUPPLEMENTARY		TOTAL		
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	TOTAL
Passenger Cars	2,609	4,497	4,746	1,910	3,184	3,128	10,539	9,535	20,074
Truck Gross Registered Weight									
6,000# or less	397	483	1,126	229	853	439	2,376	1,151	3,527
6,001 - 12,000	158	192	448	91	339	175	945	458	1,403
12,001 - 18,000	24	27	60	12	44	20	128	59	187
18,001 - 24,000	18	19	40	8	29	12	87	39	126
24,001 - 30,000	20	21	47	9	33	14	100	44	144
30,001 - 36,000	8	9	19	4	13	5	40	18	58
36,001 - 42,000	6	7	15	3	11	4	32	14	46
42,001 - 48,000	24	13	27	4	15	5	66	22	88
48,001 - 54,000	11	7	13	2	8	3	32	12	44
54,001 - 60,010	25	17	31	5	18	7	74	29	103
60,011 - 66,000	19	9	14	2	5	2	38	13	51
66,001 - 73,280	21	8	14	2	4	1	39	11	50
73,281 - 78,000	83	25	53	5	12	3	148	33	181
Over 78,000	812	240	516	53	121	28	1,449	321	1,770

TABLE II
(Continued from page 5)

1985

Percent of Travel on State Systems

LOCAL TRUCKS & BUSES

	INTERSTATE		PRIMARY		SUPPLEMENTARY	
	Rural	Urban	Rural	Urban	Rural	Urban
Truck Gross Registered Weight						
6,000# or less	11.3	13.7	31.9	6.5	24.2	12.4
6,001 - 12,000	11.3	13.7	31.9	6.5	24.2	12.4
12,001 - 18,000	12.9	14.3	32.1	6.3	23.4	11.0
18,001 - 24,000	14.0	14.7	32.3	6.3	23.0	9.7
24,001 - 30,000	14.0	14.9	32.3	6.2	22.9	9.7
30,001 - 36,000	12.8	15.7	32.5	6.2	23.6	9.2
36,001 - 42,000	13.1	15.9	32.9	6.0	23.3	8.8
42,001 - 48,000	26.9	15.4	30.6	4.7	16.7	5.7
48,001 - 54,000	25.2	16.3	30.1	4.9	16.2	7.3
54,001 - 60,010	24.6	16.9	29.7	5.1	16.9	6.8
60,011 - 66,000	37.1	17.5	27.9	4.1	9.3	4.1
66,001 - 72,000	40.3	15.3	30.5	2.8	8.3	2.8
Over 72,000	45.2	13.4	30.5	2.8	6.3	1.8
Buses						
Commercial	37.2	16.6	27.8	4.0	10.4	4.0
School	8.9	6.4	23.6	9.6	35.6	15.9

TABLE III

(Continued on page 8)

1985

Percent of Travel on State Systems

PASSENGER CARS & BEYOND LOCAL TRUCKS

	INTERSTATE		PRIMARY		SUPPLEMENTARY	
	Rural	Urban	Rural	Urban	Rural	Urban
Passenger Cars	13.0	22.4	23.6	9.5	15.9	15.6
Truck Gross Registered Weight						
6,000# or less	11.3	13.7	31.9	6.5	24.2	12.4
6,001 - 12,000	11.3	13.7	31.9	6.5	24.2	12.4
12,001 - 18,000	12.8	14.3	32.1	6.4	23.5	10.9
18,001 - 24,000	14.0	14.9	32.2	6.2	23.0	9.7
24,001 - 30,000	14.0	14.9	32.3	6.3	22.9	9.6
30,001 - 36,000	13.1	15.9	32.5	6.1	23.3	9.1
36,001 - 42,000	13.0	15.8	32.6	6.2	23.2	9.2
42,001 - 48,000	26.8	15.1	30.5	4.8	17.0	5.8
48,001 - 54,000	25.2	16.1	29.8	5.2	17.1	6.6
54,001 - 60,010	24.3	16.1	30.2	5.2	17.5	6.7
60,011 - 66,000	37.1	16.6	27.7	4.1	10.6	3.9
66,000 - 73,280	41.5	15.2	28.8	3.4	8.3	2.8
73,281 - 78,000	45.9	13.6	29.2	3.0	6.8	1.5
Over 78,000	45.9	13.6	29.2	3.0	6.8	1.5

TABLE III

(Continued from page 7)

HOW LARGE IS THE SYSTEM AND HOW IS IT USED?

Estimated mileage of the State Highway System for 1985 is 32,235 miles. This will be only 6 miles greater than that in 1983.

This mileage represents only 27 percent of the total road and street mileage in Missouri, yet it carries 73 percent of the vehicle miles traveled. Eighty-seven percent of travel for trucks registered over 60,010 pounds is on the state system with 59 percent of that travel being on the Interstate System.

Total annual vehicle travel on the State system in 1983 was approximately 26.7 billion vehicle miles. It is estimated that the average travel during the study period will be 29.2 billion vehicle miles annually. This represents an increase of 9.4 percent above 1983.

Only 3.5 percent of the system mileage is designated as Interstate, yet it carries about 35 percent of the total vehicle miles of travel. The Primary System is 21.2 percent of the system mileage. It carries approximately 34 percent of the total travel. The Supplementary System is the largest at 75.3 percent of the system mileage but carries the lowest total travel, only 31 percent.

HOW IS THE SYSTEM USED?

The Department regularly makes visual counts and by statistical analysis determines the percentage of the different classes of vehicles at various locations on the different highway systems. This data is processed to develop the travel patterns of the motoring public.

In recent years a growing trend toward the use of pickup trucks and vans for personal transportation has somewhat reduced the total percentage of passenger cars.

Throughout the State system passenger cars represented 69 percent of the vehicles with panel-pickup trucks representing 13 percent. Heavier trucks and buses make up the balance of 18 percent.

WHAT WILL IT COST?

Projected direct average annual State cost of operating the State Highway System for the study period is $311 million or 75 percent of the total cost. The 29 percent of this cost allocated to the construction program contemplates matching all Federal funds. The work contemplated is largely rehabilitation of existing deteriorated facilities or upgrading of such facilities to accommodate increased traffic demands. Maintenance of the system will require 58 percent of this cost with another 13 percent going to administration.

The breakdown of the anticipated construction costs by system is shown in Table IV.

1985

ESTIMATED STATE FUNDS
APPLIED TO CONSTRUCTION COSTS

1984-1986
($1,000)

ITEM	INTERSTATE			PRIMARY			SUPPLEMENTARY			TOTAL
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total	
Grading	$ 932	$ 3,735	$ 4,667	$ 6,733	$ 813	$ 7,546	$ 5,201	$ 2,028	$ 7,229	$19,442
Bridges	506	1,554	2,060	1,139	159	1,298	514	413	927	4,285
Paving	1,743	5,111	6,854	2,207	1,325	3,532	3,794	1,496	5,290	15,676
Br. Repl.	--	--	--	12,217	443	12,660	5,438	2,043	7,481	20,141
Br. Rehab.	785	3,326	4,111	1,520	314	1,834	54	100	154	6,099
Resurf.	1,346	1,074	2,420	2,761	681	3,442	2,203	2,114	4,317	10,179
Other	457	2,482	2,939	2,756	2,862	5,618	1,799	3,736	5,535	*15,117
	$5,769	$17,282	$23,051	$29,333	$6,597	$35,930	$19,003	$11,930	$30,933	*$90,939

*Includes $1,025 safety funds.

TABLE IV

It is estimated that $275 million will be available from Federal funds each year. Some of these funds are earmarked for special purposes. Since approximately 17% of the State Highway System is not on the Federal-Aid System, that portion of the State system cannot benefit from Federal funds except for a few limited exceptions such as the Bridge Replacement or Rehabilitation Program.

Twenty-five percent of the estimated State revenue goes to other agencies for such things as law enforcement on the State Highway System, the cost of revenue collection, the cost of miscellaneous highway-related functions of other State agencies and other costs mandated by law.

These indirect costs, in millions, are distributed as follows :

Highway Patrol	$ 62.1
Department of Revenue	20.9
Public Service Commission	2.3
Office of Administration	2.2
State Auditor	0.4
Other State Agencies	8.6
OASI	7.4
TOTAL	$103.9

III

ALLOCATION OF COST RESPONSIBILITIES

WHAT IS THE PREMISE?

The premise of the study is that the user, the direct beneficiary of the system, is responsible for support of the system. Responsibility is defined as being that portion of the cost generated in the form of construction, maintenance and administrative costs attributable to those users in each registration class.

WHAT ARE THE ASSUMPTIONS?

The method is related directly to certain assumptions. The assumptions are supported by design or test data which have in some instances been modified by logical compromise to accommodate differences within the registration classes.

The basic assumptions are:

1. As the weight which a vehicle applies to the roadway surface increases, the pavement or bridge structure required to support the vehicle must be stronger and is, therefore, more expensive to construct.

2. Those vehicles which apply greater or more frequent axle loads to the roadway surface cause deterioration of the pavement or bridge structure at a greater rate than do vehicles which apply smaller or less frequent axle loads to the roadway surface.

3. Some costs are not related to weight or frequency of axle applications. The only criterion for responsibility for these costs is vehicle miles of travel.

4. Those costs which are identifiable as being directly incurred to accommodate any class or classes of vehicles are considered to be the sole responsibility of that class or those classes of vehicles so identified.

5. Those costs having no relation to weight or usage factors are a uniform responsibility of all vehicles.

6. The State system facilities benefit the user exclusively.

Having accepted such assumptions, the cost of the entire State system is allocated to the users of each of the various classes of vehicles.

This cost amounts to $690 million annually. This is reduced by the Federal-Aid funding in the estimated amount of $275 million annually available for use on the State system. The user cost remaining to be derived from State fees and taxes is $415 million each year.

IV

COST RESPONSIBILITIES OF THE USER

WHAT IS THE STUDY PURPOSE?

This study seeks to determine that share of the cost which is the proper responsibility of vehicles in each of the registration classes. How this is accomplished will be shown in this part of the study.

Already established as being the State cost to be borne by users of the State system is $415 million annually. This is financed from licenses and taxes assessed on the operation of an estimated 3.6 million vehicles. While this represents an average cost per vehicle of $115 an average figure obviously does not properly reflect the relative cost responsibility of the various vehicle classes.

The method of analysis considers the makeup of the costs and how each registration class contributes to that cost through usage and relative impact on the highway structure.

For example certain basic costs of a bridge or a pavement are appropriately shared by all classes of vehicles. The costs required to provide additional strength for heavier vehicles are incremented in a manner compatible with the effect of the various registration classes and are shared by those classes which require the added strength until the cost for the final increment is assigned only to the heaviest vehicles.

Other costs such as traffic signals, lane striping or deicing treatment of pavements and bridges are shared by all vehicles solely on the basis of usage since all benefit on that basis.

Still other costs are related to the frequency and degree of load application. A typical example is resurfacing to restore a smooth riding surface. These costs are allocated taking into consideration the axle loadings applied by vehicles in each of the registration classes for that portion of resurfacing in excess of a practical minimum.

Some administrative costs are unaffected by vehicle size, weight or usage and are therefore allocated solely on the basis of numbers in each registration class. A typical case is the cost of license issuance.

In the investigation of the effects of each class of vehicle, it is necessary to consider axle configuration. This is because a load supported on individual axles with a relatively short wheelbase is just as damaging as a much heavier load distributed over tandem axles with a long wheelbase. This is illustrated in Figure 1.

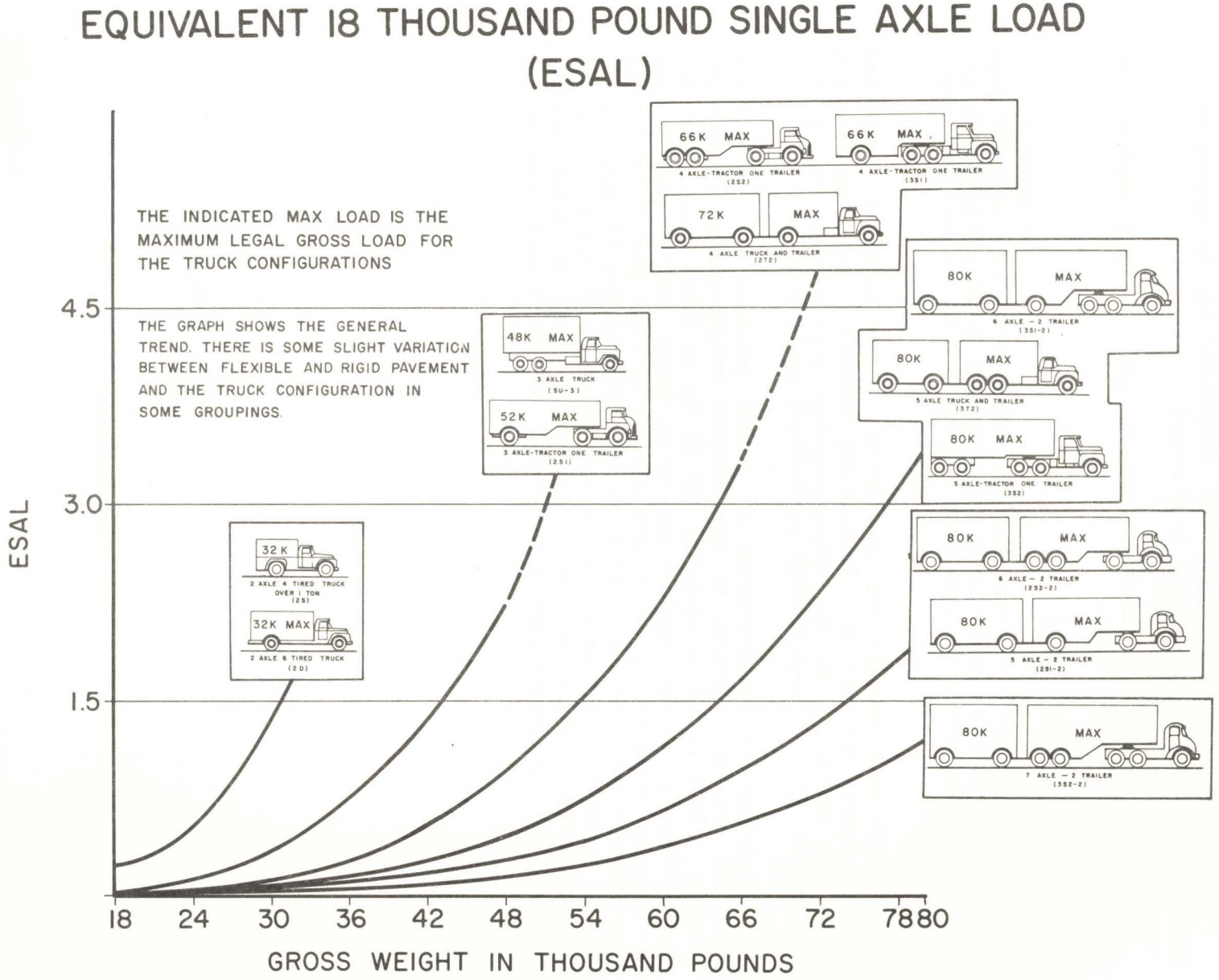
EQUIVALENT 18 THOUSAND POUND SINGLE AXLE LOAD
(ESAL)
THE INDICATED MAX LOAD IS THE MAXIMUM LEGAL GROSS LOAD FOR THE TRUCK CONFIGURATIONS
THE GRAPH SHOWS THE GENERAL TREND. THERE IS SOME SLIGHT VARIATION BETWEEN FLEXIBLE AND RIGID PAVEMENT AND THE TRUCK CONFIGURATION IN SOME GROUPINGS.
ESAL
4.5
3.0
1.5
18
24
30
36
42
48
54
60
66
72
78
80
GROSS WEIGHT IN THOUSAND POUNDS
66K MAX
4 AXLE-TRACTOR ONE TRAILER (252)
66K MAX
4 AXLE-TRACTOR ONE TRAILER (351)
72K MAX
4 AXLE TRUCK AND TRAILER (2T2)
80K MAX
6 AXLE – 2 TRAILER (351-2)
80K MAX
5 AXLE TRUCK AND TRAILER (3T2)
80K MAX
5 AXLE-TRACTOR ONE TRAILER (352)
48K MAX
3 AXLE TRUCK (SU-3)
52K MAX
3 AXLE-TRACTOR ONE TRAILER (2S1)
32K
2 AXLE 4 TIRED TRUCK OVER 1 TON (2S)
32K MAX
2 AXLE 6 TIRED TRUCK (2D)
80K MAX
6 AXLE – 2 TRAILER (252-2)
80K MAX
5 AXLE – 2 TRAILER (251-2)
80K MAX
7 AXLE – 2 TRAILER (352-2)

FIGURE 1

From these elements a composite responsibility is developed for each class of vehicle registered in Missouri.

Table V shows the responsibility assigned to each registration class on a per vehicle basis.

TRAVEL BY REGISTRATION CLASS

Average vehicle miles traveled and registration fees vary for each registration class and within each class between local and beyond local. Thus differences exist in both cost responsibility and revenue generation.

Various data sources are considered in developing the estimated miles of travel per vehicle. Present day methods of data sampling and projection available to the transportation analyst help to develop information with reasonably high statistical confidence.

Comparison of vehicle-miles of travel produces no particularly startling results. Trucks in the largest weight groups travel the farthest. This is to be expected for it is in these groups that the transcontinental freight haulers are to be found. If we examine data for vehicles registered above 60,010 pounds, we find that it represents less than 3 percent of the total truck registration yet it accounts for over 23 percent of the annual truck vehicle-miles of travel. In the broader picture, these are less than one percent of total vehicle registrations but travel over 7 percent of the total vehicle-miles per year.

1985

ESTIMATED VEHICLE RESPONSIBILITY
STATE SYSTEM

Passenger Cars	$ 84	
Truck Gross Registered Weight	Local	Beyond Local
6,000# or less	$ 76	$ 92
6,001 - 12,000	98	99
12,001 - 18,000	128	218
18,001 - 24,000	171	339
24,001 - 30,000	300	873
30,001 - 36,000	207	758
36,001 - 42,000	323	1,097
42,001 - 48,000	260	1,106
48,001 - 54,000	307	1,510
54,001 - 60,010	410	2,133
60,011 - 66,000	471	2,990
66,001 - 72,000	577	--
Over 72,000	622	--
66,001 - 73,280	--	3,054
73,281 - 78,000	--	3,069
Over 78,000	--	3,320

	SCHOOL	COMMERCIAL
Buses	113	1,794

TABLE V

V

REVENUE PROJECTIONS

HOW IS IT DONE?

Vehicle registration and travel is first projected for the study period. From this information it is possible to forecast revenues generated by user-related fees such as licenses and fuel tax. Other miscellaneous revenues are projected on the basis of past experience. For this study projections of Federal funding are based on provisions of the Surface Transportation Assistance Act of 1982.

HOW MUCH REVENUE?

Total State revenues for the period, adjusted for the effects of 1984 legislation, are expected to average $415 million annually. This will be supplemented by $275 million annually from Federal funds.

WHAT ARE REVENUE SOURCES?

State revenues are largely derived from license fees and fuel taxes. A significant amount also comes from miscellaneous fees, such as a portion of the sales tax on motor vehicles.

Registration Fees

Registration (or licensing) of trucks involves 16 weight groups. These groups are further split between local and beyond local. Those vehicles registered for "local" use are limited to travel within 25 miles of the location of registry except for farm vehicles hauling the owners' property. There are no travel restrictions on vehicles possessing "beyond local" registration.

Fees for registration of passenger cars are established by "taxable horsepower". For buses the fee structure considers function and passenger capacity.

Estimated average annual registrations and the fee structure are shown by group. From the estimated 3.605 million vehicles, revenue from registration fees is expected to produce $135.9 million. Fees from approximately 399,000 trailers should generate an additional $2.6 million which is included with Miscellaneous Motor Vehicle Fees in Table VI.

Motor Fuel Tax

The State collects 7 cents per gallon for motor fuel sold for highway use in Missouri. By constitutional provisions 15 percent of the

collected tax is distributed to the cities of over 100 population and 10 percent to the counties. The remaining 75 percent is allocated to the operation of the State Highway System.

Historical records of travel and fuel consumption rates by travel class were reviewed and adjusted for trends associated with improved fuel efficiency of newer vehicles which resulted in a usage estimate of 2.9 billion gallons annually. Based on the present tax rate, this would produce revenues from which $152 million would accrue to the State Highway System.

Because of increasingly fuel-efficient motor vehicles, the trends in fuel consumption have not paralleled the trends in vehicle registration and vehicle miles traveled as they did a few years ago. While vehicle registration is expected to increase by 2.1 percent annually and vehicle miles traveled by 4.5 percent annually, the fuel consumption is expected to stabilize or decrease slightly.

Miscellaneous Revenue

This is a catchall label for fees which generate State Highway revenues but are not directly attributable to specific vehicles as are registration fees, nor to all vehicles, as are fuel taxes. Nevertheless they are user fees which generate a significant level of funding. Revenues generated by these items are shown in Table VI.

TAX PAYMENT PER VEHICLE

The average annual payment per vehicle was developed from the registration fee, fuel tax and miscellaneous fee data.

Where the source is clearly related to a particular registration class or group of classes, the generated revenue is prorated to vehicles in that class or group. Where the source is unrelated to specific vehicle operation, such as drivers' license fees, the generated revenue is prorated to all vehicles. Thus every effort is made to assure that the tax responsibility of each vehicle is offset by appropriate allocation of all revenues properly attributable to that vehicle.

Again it is emphasized that these projections are related only to programs developed on the basis of current fee structures and do not reflect highway needs.

Based on these estimates, the average annual State revenue from all these sources is estimated to be $415 million.

Estimated state payments by trucks range from $70 for trucks registered at or below 6,000 pounds for local service to $2,647 for beyond local trucks registered to 80,000 pounds. Passenger cars generate an average annual payment of $92. The estimate of payment per vehicle is shown in Table VII.

ESTIMATED AVERAGE ANNUAL HIGHWAY REVENUES
STATE SHARE
1984-1986
($1,000)

Motor Vehicle License	$135,907
Motor Fuel Tax	152,343
Motor Vehicle Sales Tax	47,071
Motor Vehicle Use Tax	27,678
Miscellaneous Motor Vehicle Fees (Includes such items as reciprocity fees, penalties, titles, dealer plates, etc.)	20,103
Motor Vehicle Inspection	2,131
Drivers' License	11,663
Public Service Commission	3,281
Road Fund Interest	11,300
Miscellaneous Receipts (Includes oversize and overweight permits.)	4,000
	$415,477

TABLE VI

1985

ESTIMATED VEHICLE PAYMENTS
STATE SYSTEM

Passenger Cars	$ 92	
Truck Gross Registered Weight	Local	Beyond Local
6,000# or less	$ 70	$ 91
6,001 - 12,000	85	109
12,001 - 18,000	155	234
18,001 - 24,000	168	295
24,001 - 30,000	214	464
30,001 - 36,000	240	626
36,001 - 42,000	292	780
42,001 - 48,000	314	945
48,001 - 54,000	364	1,142
54,001 - 60,010	406	1,406
60,011 - 66,000	541	1,845
66,001 - 72,000	678	--
Over 72,000	679	--
66,001 - 73,280	--	2,235
73,281 - 78,000	--	2,571
Over 78,000	--	2,647

	SCHOOL	COMMERCIAL
Buses	130	1,559

TABLE VII

VI

COMPARISON OF USER RESPONSIBILITY AND TAX PAYMENTS

Is each class of vehicle paying its fair share? This is the key question. This is why the study makes comparisons between cost responsibility and revenue generated for each class of vehicle registered. It indicates any discrepancies and their magnitude.

Table VIII shows the comparative values for all registration classes. Figure 2 graphically depicts the comparisons for all classes of trucks.

The study has shown that passenger cars, some of the lighter beyond local trucks and most heavier local trucks are currently providing revenues in excess of their responsibility. The number of vehicles that overpay is large compared to the number that underpay. A large adjustment would, therefore, be necessary in either responsibility or payment for those vehicles which now significantly underpay to have any appreciable effect on these factors for those vehicles which now overpay.

For example, beyond local vehicles registered for gross weights over 54,000 pounds would have to pay around $114 more per unit annually to offset a reduction of only one dollar per unit annually for passenger cars.

The results of this or other studies of a similar nature definitely establish trends which are not particularly sensitive to changes in some of the elements. On the other hand, specific values may be significantly altered if circumstances force a change in the elements to be funded. Thus it is that we can say with confidence that some classes of vehicles pay less than their fair share of the cost of operating the highway system while other classes pay more than their fair share. The dollar value of such difference would, however, vary somewhat if the distribution of costs between the elements making up the total were significantly different. In this study about three-fourths of the projected costs were allocated on some other basis than weight.

This is why although FY 1985 projection was used, it was tested against averages over the three-year period to see that it would not introduce significant shifts in responsibility.

1985

COMPARISON OF ESTIMATED PAYMENT AND RESPONSIBILITY

	STATE PAYMENT	STATE RESPONSI-BILITY	PAYMENT VS. RESPONSI-BILITY	STATE PAYMENT	STATE RESPONSI-BILITY	PAYMENT VS. RESPONSI-BILITY
Passenger Cars	$ 92	$ 84	$ 8			
Truck Gross Registered Weight	LOCAL			BEYOND LOCAL		
6,000# or less	70	76	- 6	$ 91	$ 92	$- 1
6,001 - 12,000	85	98	-13	109	99	10
12,001 - 18,000	155	128	27	234	218	16
18,001 - 24,000	168	171	- 3	295	339	- 44
24,001 - 30,000	214	300	-86	464	873	- 409
30,001 - 36,000	240	207	33	626	758	- 132
36,001 - 42,000	292	323	-31	780	1,097	- 317
42,001 - 48,000	314	260	54	945	1,106	- 161
48,001 - 54,000	364	307	57	1,142	1,510	- 368
54,001 - 60,010	406	410	- 4	1,406	2,133	- 727
60,011 - 66,000	541	471	70	1,845	2,990	-1,145
66,001 - 72,000	678	577	101	--	--	--
Over 72,000	679	622	57	--	--	--
66,001 - 73,280	--	--	--	2,235	3,054	- 819
73,281 - 78,000	--	--	--	2,571	3,069	- 498
Over 78,000	--	--	--	2,647	3,320	- 673
	SCHOOL			COMMERCIAL		
Buses	$130	$113	$17	$1,559	$1,794	$- 235

TABLE VIII

ESTIMATED 1985 ANNUAL RESPONSIBILITY AND PAYMENT FOR THE STATE HIGHWAY SYSTEM

LOCAL & BEYOND LOCAL TRUCKS

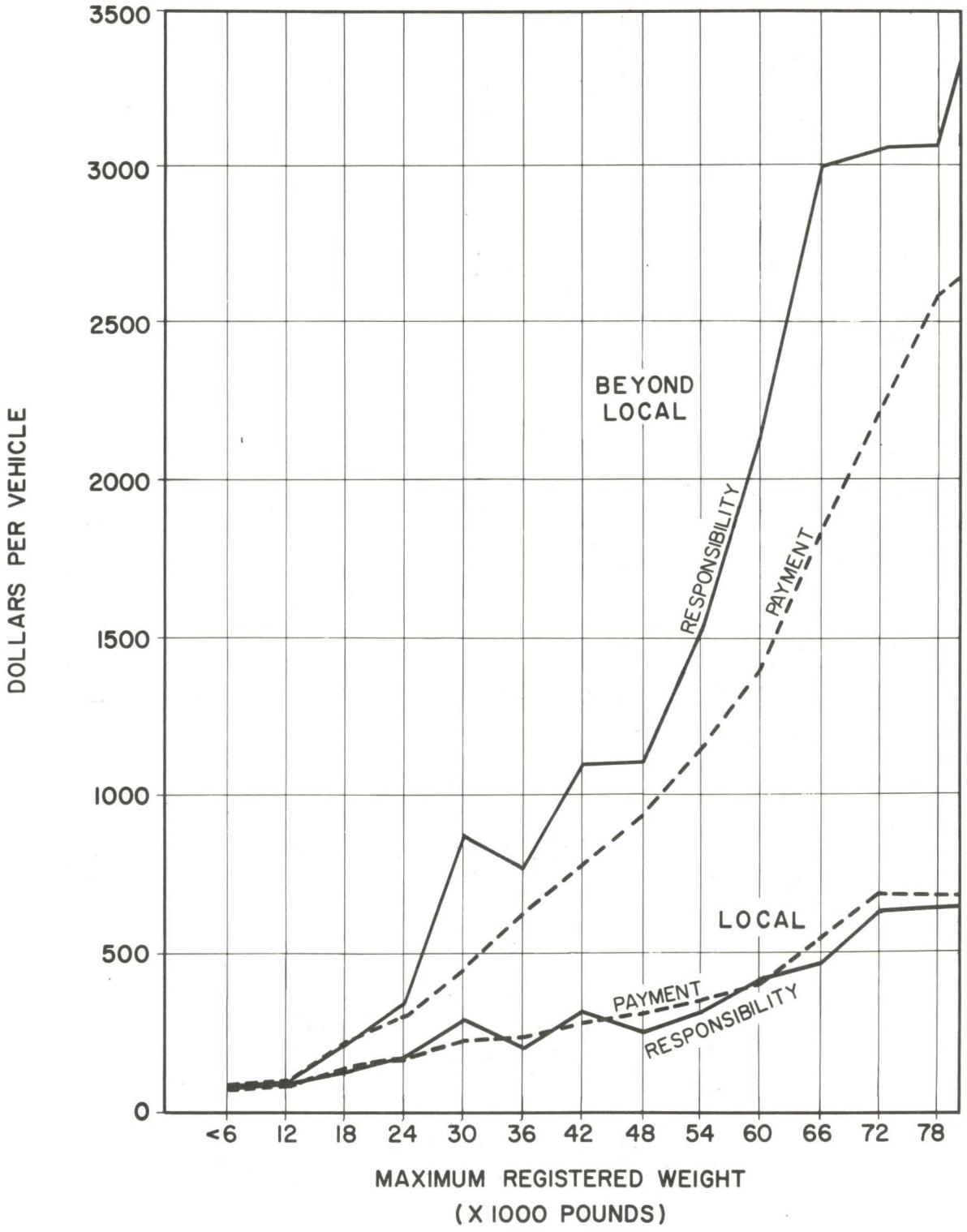

FIGURE 2